Onsite Wastewater Treatment Systems Special Issues Fact Sheet 4

Holding Tanks and Hauling Systems

Description

A holding tank or vault receives wastewater from a home or commercial establishment and stores it until it is pumped out and hauled to a receiving/processing facility. Although similar to septic tanks, vaults have no outlet piping and must be watertight. The volume can range from 1,000 gallons to 4,000 gallons or more. The vault should be equipped with an audible and visible high-water alarm, which alters the resident to the need for pumping.

Different sizes of vaults and tank trucks can be used; water conservation can reduce costs considerably by reducing the frequency of pumping. A vault can be equipped with a standpipe and a quick disconnect to which the pumping truck can be directly connected for efficient (minimal spillage) emptying of the vault.

Holding tanks can be used for the entire wastewater flow in cases where conventional and typical alternative systems are not feasible. They are often used this way for seasonal homes in sensitive environmental settings. Holding tanks can also be used to collect only a part of the wastewater flow. Usually, they are used to collect the greywater when non-water-carriage toilets are employed in sensitive areas. This option permits a significant reduction (usually one-third or more) in the number of tank pumpings as compared to the whole wastewater collection option. Another holding tank option is to collect only the blackwater fraction of the wastewater while the graywater is treated in an OWTS. This option is most popular in estuarine areas where significant nitrogen removal is required because the blackwater may contain from 70 to 90 percent of the total nitrogen load. In this case the reduction in pumping frequency from the whole wastewater option would be about two-thirds.

Over and above these combinations a program to reduce water use can be overlaid. The critical contribution of such a program (see chapter 3) is to reduce the daily volume of wastewater (blackwater, graywater, or combined) produced and the required frequency of holding tank pumping. Some onsite wastewater recycling can be added to this program in arid regions where gravity feed and belowground watering of nonconsumable vegetation can be accomplished. However, such a program must meet all local public health requirements.

Applications

Pump and haul collection is best used when soil absorption fields do not work (for example, where bedrock or ground water levels are near the ground surface) and there is no sewer system. Typical applications are second homes, where annual occupancy may be only a few days to a few months; where a nuisance or public health hazard must be abated; where an isolated building has no running water; in temporary structures or gathering places; or where nutrients must be excluded from ground water to protect environmentally sensitive areas. Pump and haul collection may also simply be the least expensive alternative in some places.

Pump and haul systems are viable only under a wastewater authority that guarantees service. Pump and haul collection can became prohibitively expensive when homes are occupied all the time or where the distance from the treatment plant to the home is more than a few miles.

Management needs

Holding tanks should be used only where a proper management program is in place. Construction requirement are essentially the same as for a septic tank in that the onsite testing for tank leakage is vital to a successful design and the alarm system must be dredged for proper functioning before acceptance.

In addition to timely pumping, operation and maintenance requirements should include checking the alarm function, cleaning the activation floats, and comparing volume used vs. volume accumulated in the tank. The skill requirements at the site are minimal and can be estimated as approximately 1 hour per pumping. There are normally no energy requirements; the residuals are the tank contents, and confined-space entry safety requirements must be followed if tank entry is required.

Risk management issues

Holding tanks are not subject to upset by flow variation, toxic loads or power outages. They should be insulated and possibly heat-treated in extremely cold climates. If properly vented through the building sewer, they should not exhibit odor problems, but use in hot climates may require an increase in pumping frequency or a regular addition of lime for mitigation. There is a release of objectionable odors during tank pumping, which can cause some discomfort to residents.

Costs

More recent cost estimates for holding tank-hauling wastewater disposal indicate that tank installation is about $1 per gallon of capacity (up to 5,000 gallons) while the alarm system is about $400.

Tank pumping is generally in range of 10 to 30 cents per gallon, to which labor, travel and equipment amortization may be added (or these costs may be included in a flat fee). Travel costs will dominate if the round-trip distance to the holding tank, to the disposal site, and back to home base exceeds 50 miles. The permit costs to discharge at an appointed sit (treatment plant, land spreading site, or independent treatment facility) is also escalated, multiple pumping from a year-round house can become extremely expensive.

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